Space Weather Forecast

Issued on Sunday, 13 November 2022 at 00:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Chance of Moderate class flares (Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Moderate, with one low level Moderate flare near the start of the period from the most significant sunspot region in the northwest. A period of more enhanced Common-class flare activity also occurred 12/1400-2000 UTC, mainly from this region. There are two other numbered regions on the visible disc, both also located in the northwest quadrant. The larger region is a moderately complex bi-polar group, the other a small weak bi-polar group.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind saw a gradual, albeit erratic increase through slightly elevated levels to a peak close to elevated levels around 12/1800 UTC, with a slight decrease observed thereafter. Magnetic field strength fluctuated moderately at first, before returning to weak levels, with the important north-south component showing a similar trend, becoming mostly positive (northward). Geomagnetic activity was Unsettled (Kp 3) on the first synoptic interval, otherwise Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be generally Low, with a chance of isolated Moderate flare activity. The most likely source of activity is from the largest and most complex sunspot regions in the northwestern hemisphere.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are currently forecast. Although some faint ejecta, perhaps associated with occasional flare activity over the past couple of days, cannot completely be discounted as having some Earth directed trajectory, any potential impacts would be expected to be weak.

Solar winds are currently at slightly elevated levels, due to ongoing coronal hole influence. Winds are expected to return towards slow-ambient levels over the next couple of days as HSS effects wane. A small coronal hole in the northwest will rotate into a potentially geoeffective position by day 3 (15 November), and may give a weak enhancement to solar winds, although confidence is low as this is not a recurrent feature. However, model forecasts do hint that this is a possibility.

Geomagnetic activity is expected to be predominantly Quiet to Unsettled through the period,

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

perhaps with a slight chance of isolated Active intervals around day 3 (15 November).
Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background levels with only a slight, but increased chance of solar radiation storms through days 2 to 4.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.